MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2015 / 2016

PPS 0335 – PROBLEM SOLVING AND PROGRAMMING

(Foundation in Information Technology)

10 MARCH 2016
2.30 p.m. - 4.30 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of 3 pages (excluding the cover page) with 6 questions only.
2. Attempt **FIVE** out of **SIX** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answers in the Answer Booklet provided.

Instructions: Attempt **FIVE** out of **SIX** questions. Write your answers in the Answer Booklet.

QUESTION 1 [10 Marks]

a. As a programmer, you must know some computer fundamentals before you solve certain types of computer problems. Thus, answer the following questions:
   i. What is the difference between a constant and a variable?

(2 marks)

   ii. Use this equation $x = 5 + 7$ as an example. Explain the concepts of operator, operand and resultant.

(3 marks)

   iii. What are **TWO(2)** data types for numeric value?

(1 mark)

b. What is the result of the following equations given A = 5 and B = 4.
   i. X = A + 2 * B - 3
   ii. X = 20 MOD A + B
   iii. X = 2 + A * (9.0/4.0)
   iv. X = (A + 4) \ (B – 2)

(2 marks)

c. Set up a logical expression in a decision statement for the following conditions.
   i. Weight is greater than or equal to 100kg and height is less than 150cm, print the message "Learn to design ideal body".
   ii. Not age 18, print the message "Not allow to register".

(2 marks)

QUESTION 2 [10 Marks]

In a C++ program, a user is asked to enter a number, ***num***, and it is added to a variable ***sum***. Then, the test condition in the repeat...until loop is checked. If the test condition is true, which is ***sum*** is less than or equal to 100, the body of repeat...until loop is again executed until ***sum*** is greater than 100. The program will then print the value of ***sum***. Develop an algorithm and a flowchart for the program.

(10 marks)

Continued ...

QUESTION 3 [10 Marks]

a. Write a pseudocode to ask for a positive integer and use while...loop to ensure only a positive integer is entered. Then, use while…loop again to print out all positive numbers only starting from the number entered by a decrement value of 2.

Sample output:

Enter a positive integer: -5
Enter a positive integer: 5
5
3
1

(5 marks)

b. List the **SIX (6)** problem-solving steps to solve a problem.

(3 marks)

c. Write the following mathematical assignments in computer equation form:

i. $x = \frac{3a+1}{a^2}$

ii. $p = \frac{1}{12}x^2 - (10x + 300)(x^2)$

(2 marks)

QUESTION 4 [10 Marks]

Hasan wishes to save for retirement. He puts RM300 into an account every month for 25 years. The bank will give 4% bonus every year. He plans to donate 2.5% of his saving to the poor and needy people every year after the bonus payment. Develop a PAC chart to find the amount he will spend for donation every year and the amount in his retirement account after 25 years.

PAC

Given Data	Required Result
Processing Required	Solution Alternatives

(10 marks)

Continued …

QUESTION 5 [10 Marks]

a. A computer manufacturer produces 100 computers each day. The production cost for each computer is RM1200. Each computer is sold for RM1950. Develop an IPO chart to find the profit gained if all 100 computers are sold each day.

IPO chart

Input	Processing	Module Reference	Output

(6 marks)

b. Set up an equation to calculate the following problems. Use your own suitable variables.
   i. Fatimah has RM25 in her pocket. How much money does she need to buy a book that costs RM69 with 20% discount?
   ii. Find the total weight of 50 boxes whereby half of the boxes are 0.5kg each and the balance is 2.5kg each.
   iii. A newspaper man sold twice as much newspaper in the afternoon than in the morning. If he sold 60 papers that day, how many papers did he sell in the afternoon?
   iv. Adam, Saleh, and Aishah were picking strawberries. Adam picked twice as much strawberries than Saleh. Aishah picked 2 kg more than Saleh. Saleh picked 3kg. How many kilograms of strawberries they had picked?

(4 marks)

QUESTION 6 [10 Marks]

a. A retail shop is celebrating its 30th anniversary by giving stamps for certain amount spent on that day in a single receipt. The stamps can be redeemed for various kind of gift based on the following tables. Develop **TWO (2)** pseudocodes for this problem. The first pseudocode uses positive logic and the second pseudocode uses negative logic. Develop only the *if/then/else* part.

Total Stamps Collected	Free Gift
5 - 10	pen
11 - 30	watch
31 - 50	t-shirt
51 - 100	bag

(8 marks)

b. Identify the problem in these variables.
   i. $grosspayIF
   ii. COUNT#1
   iii. Attempted-Hours
   iv. Interest Rate

(2 marks)

End of Paper